

## CLAIM AMENDMENTS

### In the claims:

Please cancel claims 1-25, 32, 36, and 40-41 without prejudice or disclaimer.

Please add new claims 43-45.

Please amend claims 26, 32, and 37 as follows.

Claims 1-25. (Canceled).

26. (Currently Amended) A fault-tolerant system, comprising:

a first circuit board removably inserted within a first receptor of a backplane, the first circuit board having a first, second, and third light receivers affixed to its bottom surface;

a second circuit board removably inserted within a second receptor of the backplane, the second circuit board having a first and second light transmitters affixed to its top surface, the second circuit board having an aperture therein, and having a fourth and fifth light receivers affixed to its bottom surface; and

a third circuit board removably inserted within a third receptor of the backplane, the third circuit board having a third, fourth, and fifth light transmitters affixed to its top surface,

wherein a detected change in transmission intensity of a faulted data signal automatically initiates an orderly shutdown and rerouting of the faulted data signal.

27. (Original) The fault-tolerant system of Claim 26, further comprising:

a first optical channel defined between the first light receiver and the first light transmitter.

28. (Original) The fault-tolerant system of Claim 26, further comprising:

a second optical channel defined between the third light receiver and the second light transmitter.

29. (Original) The fault-tolerant system of Claim 26, further comprising:

a third optical channel defined between the second light receiver and the fourth light transmitter, wherein a data signal carried by the third optical channel passes through the aperture in the second circuit board.

30. (Original) The fault-tolerant system of Claim 26, further comprising:  
a fourth optical channel defined between the fourth light receiver and the third light transmitter.

31. (Original) The fault-tolerant system of Claim 26, further comprising:  
a fifth optical channel defined between the fifth light receiver and the fifth light transmitter.

32. (Canceled).

33. (Currently Amended) The fault-tolerant system of Claim ~~[[32]]~~ 26 wherein the change in transmission intensity results from an insertion or removal of a circuit board from the stack of circuit boards.

34. (Original) The fault-tolerant system of Claim 26 wherein removal of the second circuit board from the stack of circuit boards during operation of an optical channel automatically provides an alternate optical channel.

35. (Original) The fault-tolerant system of Claim 26 wherein no physical connection between circuit boards is needed to transmit and receive a data signal through the air between two or more boards.

36. (Canceled).

37. (Currently Amended) A method, comprising:

providing a plurality of circuit boards, each board having at least a light transmitter affixed to its top surface and at least a light receiver affixed to its bottom surface, at least one board having an aperture therein;

removably inserting the plurality of circuit boards into a corresponding plurality of receptors in a backplane, wherein the circuit board having an aperture therein is positioned between a first circuit board and a second circuit board, such that a data signal transmitted through the air from a light transmitter on either the first or second circuit board can pass through the aperture; and

designating a redundant circuit board to operate in a shadow mode until a change in transmission intensity is detected in an optical channel.

38. (Original) The method of Claim 37, further comprising:

establishing at least one optical channel between the plurality of boards, the optical channel being defined by a light transmitter on one board transmitting a data signal through the air to a corresponding light receiver on another board.

39. (Original) The method of Claim 37, further comprising:

arranging the plurality of circuit boards into a first group and a second group, wherein a placement of circuit boards in the first group forms a pattern, and wherein a placement of circuit boards in the second group forms a mirror image of the pattern.

Claims 40-41. (Canceled).

42. (Original) The method of Claim 37, further comprising:

transmitting a first frequency color from the first light transmitter; and  
transmitting a second frequency color from the second light transmitter.

43. (New) A fault-tolerant system, comprising:

a first circuit board removably inserted within a first receptor of a backplane, the first circuit board having a first plurality of light receivers affixed to its bottom surface;

a second circuit board removably inserted within a second receptor of the backplane, the second circuit board having a first plurality of light transmitters affixed to its top surface, the second circuit board having an aperture therein, and having a second plurality of light receivers affixed to its bottom surface; and

a third circuit board removably inserted within a third receptor of the backplane, the third circuit board having a second plurality of light transmitters affixed to its top surface,

wherein a spare backplane receptor contains a backup circuit board that can be operated in a shadow mode until ordered to carry data traffic rerouted from a faulted optical channel.

44. (New) A method, comprising:

providing a plurality of circuit boards, each board having at least a light transmitter affixed to its top surface and at least a light receiver affixed to its bottom surface, at least one board having an aperture therein;

removably inserting the plurality of circuit boards into a corresponding plurality of receptors in a backplane, wherein the circuit board having an aperture therein is positioned between a first circuit board and a second circuit board, such that a data signal transmitted through the air from a light transmitter on either the first or second circuit board can pass through the aperture;

detecting a change in transmission intensity in the optical channel that occurs when a circuit board is inserted or removed;

automatically rerouting a data signal from the faulted optical channel through the redundant circuit board; and

automatically managing an orderly shutdown of the faulted optical channel

## **AMENDMENTS TO THE DRAWINGS**

The attached six sheets of drawings include changes to Figures 1-4 and 5a-5b. These sheets replace the original sheets. In Figures 1-4 and 5a-5b, the reference numbers described in the Specification were added.

Attachment: Replacement Sheets  
Annotated Sheets Showing Changes